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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/039,599	10/19/2001	George M. Clifford JR.	10010524-1	2233

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AGILENT TECHNOLOGIES, INC.
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Intellectual Property Administration
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EXAMINER

PUNNOOSE, ROY M

ART UNIT PAPER NUMBER

2877

DATE MAILED: 06/19/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/039,599

Applicant(s)

CLIFFORD ET AL.

Examiner

Roy M. Punnoose

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-19 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 October 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Specification

1. The disclosure is objected to because of the following informality: The citation of U.S. Patent 5,642,196 (page 1, lines 11-14) is repeated in lines 28-30 (page1). Appropriate correction is required.

Information Disclosure Statement

2. The listing of references in the specification is not a proper information disclosure statement. 37 CFR 1.98(b) requires a list of all patents, publications, or other information submitted for consideration by the Office, and MPEP § 609 A(1) states, "the list may not be incorporated into the specification but must be submitted in a separate paper." Therefore, unless the references have been cited by the examiner on form PTO-892, they have not been considered.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over prior art disclosed by the applicant (see page 2, line 6 – page 8, line 30, and, Figures 1 and 2 of the instant application) in view of Kouno et al (US 5,233,291).

5. Claim 1 is rejected for the following reasons:

- A. With regard to claim 1, prior art teaches a system and method for measuring a distance between materials comprising, a first material 146 having a surface 134, a second material 150 having a surface 136, the surface 136 of the second material 150 being separated from the surface 134 of the first material 146 by a gap (which is the distance between surfaces 134 and 136), wherein the distance between materials are determined using conventional means, wherein said conventional means may include transmitting a light through the first material and onto the surface of the second material, and detecting reflected light from the slot surface and the surface of the second material such that the measured distance is determined (see page 2, line 6 – page 8, line 30, and, Figures 1 and 2 of the instant application) for accurately measuring gaps using a conventional gap measuring system. However, prior art does not teach of a slot disposed in the first material such that a slot surface is formed on the first material, the distance between the surface of the first material and the slot surface being a precisely known distance, such that when a cavity distance is measured between the surface of the second material and the slot surface, a gap distance is determined by subtracting the precisely known distance from the cavity distance, for accurately measuring gaps smaller 10 microns using a conventional gap measuring system.
- B. Kouno et al (Kouno hereinafter) teaches the principle of gap measurement (see col.5, lines 63+) in which a projection 201 is formed on a first material 4 (Figure 9) the thickness T_e of the projection 201 being a precisely known thickness (see col.11, line 50) such that when a cavity distance G is measured between the surface of a second material

100 and the surface of the first material 4, a gap distance G_e is determined by subtracting the precisely known distance T_e from the cavity distance G (see col.11, lines 44-51).

- C. In view of Kouno's teaching, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the old and well known method of measuring gap as disclosed by Kouno into prior art measurement system and method due to the fact that such incorporation would provide a system that can accurately measure gaps smaller than 10 microns using a conventional gap measuring system. Accordingly, such incorporation would have constituted an alternative means/obvious engineering expedience for one of ordinary skill in the art at the time the invention was made.

Note: Kouno teaches of a projection 201 (an electrode) of precisely known thickness T_e mounted on a first material 4, in comparison to applicant's slot 310 of precisely known depth in a first material 304. Kouno determines the distance G_e between two materials by subtracting a measured distance G from a known distance T_e . The applicant also determines the distance 308 between two materials by subtracting a measured (cavity) distance 322 from a known distance 312 (depth of slot). Subtracting an "offset" distance from a measured distance is old and well known in the art.

6. Claim 2 is rejected because their limitations are an extension and/or duplication of the limitations of rejected claim 1. Claim 2 is directed to a second slot disposed in the second material, and the distance between the surface of the second material and the second slot surface being a precisely known second distance, such that when a cavity distance is measured between the slot surface and the second slot surface, the gap distance is determined by subtracting the precisely known distance and the precisely known second distance from the cavity distance. In view of Kouno's teaching, it would have been obvious to one of ordinary skill in the art at the time the invention was made to subtract the precisely known distances/depths of both a first and the second

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slot from a measured distance to obtain the distance between two materials in a system that can accurately measure gaps smaller than 10 microns using a conventional gap measuring system.

7. Claim 3 is rejected for the following reasons:

A. With regard to claim 3, prior art teaches a system and method for measuring a distance between materials comprising, a first material 146 having a surface 134, a second material 150 having a surface 136, the surface 136 of the second material 150 being separated from the surface 134 of the first material 146 by a gap (which is the distance between surfaces 134 and 136), wherein the distance between materials are determined using conventional means, wherein said conventional means may include transmitting a light through the first material and onto the surface of the second material, and detecting reflected light from the slot surface and the surface of the second material such that the measured distance is determined (see page 2, line 6 – page 8, line 30, and, Figures 1 and 2 of the instant application) for accurately measuring gaps using a conventional gap measuring system. However, prior art does not teach of a slot disposed in the first material such that a slot surface is formed on the first material, the distance between the surface of the first material and the slot surface being a precisely known distance, such that when a cavity distance is measured between the surface of the second material and the slot surface, a gap distance is determined by subtracting the precisely known distance from the cavity distance, for accurately measuring gaps smaller 10 microns using a conventional gap measuring system.

- B. Kouno et al (Kouno hereinafter) teaches the principle of gap measurement (see col.5, lines 63+) in which a projection 201 is formed on a first material 4 (Figure 9) the thickness T_e of the projection 201 being a precisely known thickness (see col.11, line 50) such that when a cavity distance G is measured between the surface of a second material 100 and the surface of the first material 4, a gap distance G_e is determined by subtracting the precisely known distance T_e from the cavity distance G (see col.11, lines 44-51).
- C. In view of Kouno's teaching, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the old and well known method of measuring gap as disclosed by Kouno into prior art measurement system and method due to the fact that such incorporation would provide a system that can accurately measure gaps smaller than 10 microns using a conventional gap measuring system. Accordingly, such incorporation would have constituted an alternative means/obvious engineering expedience for one of ordinary skill in the art at the time the invention was made.

8. Claim 4 is rejected because, in view of Kouno's and prior art teachings as stated above, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have the step of measuring the precisely known distance completed before the step of measuring distance between the slot surface formed by the slot in the first material and the surface on the second material because, by having the known distance readily available for processing, calculation of the gap distance can be carried out with speed and efficiency in a system for accurately measuring gaps that are smaller than 10 microns using a conventional gap measuring

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system. Accordingly, such a selection of the timing of the measurement would have constituted an alternative means/obvious engineering expedience for one of ordinary skill in the art at the time the invention was made.

9. Claim 5 is rejected because, in view of Kouno's and prior art teachings as stated above, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have the step of measuring the precisely known distance concurrently with the step of measuring distance between the slot surface formed by the slot in the first material and the surface on the second material because, in a production environment where a slots are formed on the production line, it may not be possible to have the precisely known distance measured in advance and therefore it may be measured concurrently or after the step of measuring distance between the slot surface formed by the slot in the first material and the surface on the second material, as selected by a user to obtain a desired result in a system for accurately measuring gaps that are smaller than 10 microns using a conventional gap measuring system. Accordingly, such a selection of the timing of the measurement would have constituted an alternative means/obvious engineering expedience for one of ordinary skill in the art at the time the invention was made.

Note: With regard to claims 4 and 5, no evidence is provided in the specification as to why the timing of the measurement is critical to the operation or functionality of the claimed invention.

10. Claim 6 is rejected for the same reasons of rejection stated in paragraphs 5 and 7 above. Transmitting a light through a first material and onto a surface of a second material, and detecting reflected light from the slot surface and the surface of the second material to determine

the measured distance is taught by the prior art disclosed by the applicant (see page 2, line 6 – page 8, line 30, and, Figures 1 and 2 of the instant application).

11. Claim 7 is rejected because, the space between the two projections 201 can be considered as a slot (refer to Figure 14) for all functional purposes, and therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate a slot into a surface of a substrate so that the old and well known method of measuring gap as disclosed by Kouno and prior art measurement system can be employed to accurately measure gaps smaller than 10 microns using a conventional gap measuring system.

12. Claim 8 is rejected because their limitations are an extension and/or duplication of the limitations of rejected claim 1. Claim 8 is directed to a second slot disposed in the second material, and the distance between the surface of the second material and the second slot surface being a precisely known second distance, such that when a cavity distance is measured between the slot surface and the second slot surface, the gap distance is determined by subtracting the precisely known distance and the precisely known second distance from the cavity distance. In view of Kouno's teaching, it would have been obvious to one of ordinary skill in the art at the time the invention was made to subtract the precisely known distances/depths of both a first and the second slot from a measured distance to obtain the distance between two materials in a system that can accurately measure gaps smaller than 10 microns using a conventional gap measuring system.

13. Claim 9 is rejected because, the space between the two projections 201 can be considered as a slot (refer to Figure 14) for all functional purposes, and therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate a slot into a

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surface of a substrate so that the old and well known method of measuring gap as disclosed by Kouno and prior art measurement system can be employed to accurately measure gaps smaller than 10 microns using a conventional gap measuring system.

14. Claim 10 is rejected for the same reasons of rejection stated in paragraphs 5 and 7 above.

Transmitting a light through a first material and onto a surface of a second material, and detecting reflected light from the slot surface and the surface of the second material to determine the measured distance is taught by the prior art disclosed by the applicant (see page 2, line 6 – page 8, line 30, and, Figures 1 and 2 of the instant application).

15. Claim 11 is rejected because its limitations are an extension and/or duplication of the limitations of rejected claim 1. Claim 11 is directed to forming a cavity by aligning the slots in the first and second material, such that when a cavity distance is measured between the first slot surface and the second slot surface, the gap distance is determined by subtracting from the cavity distance the precisely known distance and the precisely known second distance. In view of the combination of prior art and Kouno's teaching, it would have been obvious to one of ordinary skill in the art at the time the invention was made to subtract the precisely known distances/depths of both a first and the second slot from a measured distance to obtain the distance between two materials in a system to accurately measure gaps smaller than 10 microns using a conventional gap measuring system. It would have been obvious to one of ordinary skill in the art at the time the invention was made to observe that by aligning two cavities, the size of the cavity can be increased and gaps smaller than 10 microns can be measured by using a conventional gap measuring system.

16. Claim 12 is rejected because prior art disclosed in the instant application teaches comparing the distance between the first material and the second material with a predefined

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reference distance to determine an error distance corresponding to the compared distances (refer to line 1, page 4 – line 30, page 8; and specifically, line 4, page 4; lines 12-14, page 5; lines 1-12, page 6).

17. Claims 13 and 14 are rejected because, adjusting the position of a first or second material to minimize the error distance to a specified tolerance can be achieved by experimentation and requires only routine skill in the art.

18. Claim 15 is rejected for the following reasons:

- A. With regard to claim 15, prior art teaches a system and method for measuring a distance between materials comprising, a first material 146 having a surface 134, a second material 150 having a surface 136, the surface 136 of the second material 150 being separated from the surface 134 of the first material 146 by a gap (which is the distance between surfaces 134 and 136), wherein the distance between materials are determined using conventional means, wherein said conventional means may include transmitting a light through the first material and onto the surface of the second material, and detecting reflected light from the slot surface and the surface of the second material such that the measured distance is determined (see page 2, line 6 – page 8, line 30, and, Figures 1 and 2 of the instant application) for accurately measuring gaps using a conventional gap measuring system. However, prior art does not teach of a slot disposed in the first material such that a slot surface is formed on the first material, the distance between the surface of the first material and the slot surface being a precisely known distance, such that when a cavity distance is measured between the surface of the second material and the slot surface, a gap

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distance is determined by subtracting the precisely known distance from the cavity distance, for accurately measuring gaps smaller 10 microns using a conventional gap measuring system.

- B. Kouno et al (Kouno hereinafter) teaches the principle of gap measurement (see col.5, lines 63+) in which a projection 201 is formed on a first material 4 (Figure 9) the thickness T_e of the projection 201 being a precisely known thickness (see col.11, line 50) such that when a cavity distance G is measured between the surface of a second material 100 and the surface of the first material 4, a gap distance G_e is determined by subtracting the precisely known distance T_e from the cavity distance G (see col.11, lines 44-51).
- C. In view of Kouno's teaching, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the old and well known method of measuring gap as disclosed by Kouno into prior art measurement system and method due to the fact that such incorporation would provide a system that can accurately measure gaps smaller than 10 microns using a conventional gap measuring system. Accordingly, such incorporation would have constituted an alternative means/obvious engineering expedience for one of ordinary skill in the art at the time the invention was made.

19. Claim 16 is rejected for the same reasons of rejection stated in paragraph 18 above.

Transmitting a light through a first material and onto a surface of a second material, and detecting reflected light from the slot surface and the surface of the second material to determine

the measured distance is taught by the prior art disclosed by the applicant (see page 2, line 6 – page 8, line 30, and, Figures 1 and 2 of the instant application).

20. Claim 17 is rejected because their limitations are an extension and/or duplication of the limitations of rejected claim 1. Claim 17 is directed to a second slot disposed in the second material, and the distance between the surface of the second material and the second slot surface being a precisely known second distance, such that when a cavity distance is measured between the slot surface and the second slot surface, the gap distance is determined by subtracting the precisely known distance and the precisely known second distance from the cavity distance. In view of Kouno's teaching, it would have been obvious to one of ordinary skill in the art at the time the invention was made to subtract the precisely known distances/depths of both a first and the second slot from a measured distance to obtain the distance between two materials in a system that can accurately measure gaps smaller than 10 microns using a conventional gap measuring system.

21. Claim 18 is rejected for the same reasons of rejection stated in paragraph 18 above. Transmitting a light through a first material and onto a surface of a second material, and detecting reflected light from the slot surface and the surface of the second material to determine the measured distance is taught by the prior art disclosed by the applicant (see page 2, line 6 – page 8, line 30, and, Figures 1 and 2 of the instant application).

22. Claim 19 is rejected because its limitations are an extension and/or duplication of the limitations of rejected claim 1. Claims 19 is directed to forming a cavity by aligning the slots in the first and second material, such that when a cavity distance is measured between the first slot surface and the second slot surface, the gap distance is determined by subtracting from the cavity

distance the precisely known distance and the precisely known second distance. In view of the combination of prior art and Kouno's teaching, it would have been obvious to one of ordinary skill in the art at the time the invention was made to subtract the precisely known distances/depths of both a first and the second slot from a measured distance to obtain the distance between two materials in a system to accurately measure gaps smaller than 10 microns using a conventional gap measuring system. It would have been obvious to one of ordinary skill in the art at the time the invention was made to observe that by aligning two cavities, the size of the cavity can be increased and gaps smaller than 10 microns can be measured by using a conventional gap measuring system.

Conclusion.

23. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Examiner Roy M. Punnoose** whose telephone number is **703-306-9145**. The examiner can normally be reached on 9:00 AM - 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the applicant can reach his **Supervisory Patent Examiner, Frank G. Font**, at **(703) 308-4881**.

The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9318 for regular communications and 703-872-9319 for After Final communications.

Any inquiry of a **general nature** or relating to the status of this application should be directed to the Group receptionist whose telephone number is **(703) 305-0530**.



Roy M. Punnoose
Patent Examiner
Art Unit 2877
June 14, 2003